AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning at page 1, line 3, with the following rewritten paragraph:

BACKGROUND OF THE INVENTION

The ~~subject of the~~ present invention [[is]] concerns a spray head, especially for a high-pressure spray gun, comprising a rotary element, which is placed within a central body and through which passes a duct having a spray orifice, and a seal ensuring leak-tightness between the rotary element and the gun.

Please replace the paragraph beginning at page 1, line 10, with the following rewritten paragraph:

Patent Application PCT/CH97/00316 ~~has~~ discloses a spray head for a high-pressure spray gun, comprising an element of a cylindrical shape, which is mounted rotatably in a central body and through which passes a main conduit[[, at]]. At the end of ~~which~~ the conduit is mounted a spray nozzle for delivering a tapered high-pressure fluid jet[[, two]]. Two low-pressure air ducts ~~being~~ are prolonged from the central body within the ~~element of~~ cylindrical-shaped element ~~shape~~ on either side of the central conduit of the nozzle[[, the]]. The air-jet outlet orifices in the element of cylindrical-shaped element ~~shape being~~ are offset in relation to the inlet ~~orifices~~ orifices in communication with the ducts of the central body.

Please replace the paragraph beginning at page 1, line 23, with the following rewritten paragraph:

Patent Application PCT/CH98/00104 ~~has~~ discloses a spray head for a high-pressure spray gun, comprising a rotary element, which is placed in a central body and through which passes a duct having a spray orifice[[, and a]]. A seal ~~ensuring~~ ensures leak-tightness between the rotary element and the gun[[, the]]. The rotary element ~~having~~ has, in its central part, a spherical shape capable of cooperating with the seal placed within the central body[[, and two]]. Two circular seats are placed on either said of the spherical part bearing on the seats placed on either side of the central body.

Please replace the paragraph beginning at page 1, line 35, with the following rewritten paragraph:

The disadvantage of the spray heads known in the prior art is that the slit of the nozzle is at a level substantially equal to or lower than the top of the spray head, ~~thus~~ which always ~~resulting~~ results in interferences at the outlet of the fluid jet. Moreover, at the moment when work is stopped, the liquid which has been unable to leave the gun falls down around the nozzle~~, and the~~. The user is therefore ~~always~~ faced with the need to clean it in order to prevent dry paint from accumulating around the slit of the nozzle and on the top of the spray head. The problem becomes even more acute when spray heads with additional air jets are used, since the air jets cause turbulence giving rise to fluid sedimentation deposits on the top of the head. These deposits are particularly troublesome, since they give rise to droplets which may be thrown on to the articles to be treated by the air jets.

Please replace the paragraph beginning at page 2, line 14, with the following rewritten paragraph:

SUMMARY OF THE INVENTION

The object of the present invention is to overcome these disadvantages and to propose a spray head, especially for a high-pressure spray gun, comprising a rotary element, which is placed in a central body and through which passes a spray nozzle, and a seal ensuring leak-tightness between the rotary element and the gun[[,]]. The invention is characterized in that the rotary element has a circular central part comprising the nozzle. The central part is ~~and~~ introduced into a lateral aperture of the central body[[, the]]. Its circular central part ~~being~~ is brought, by means of an upward translational movement of the central body, into a working position against at least one inner abutment located at the top of the central body[[, the]]. The nozzle, which is placed in the circular part of the rotary element, ~~being~~ is in the working position above the top of the central body.

Please replace the paragraph beginning at page 2, line 31, with the following rewritten paragraph:

~~With~~ Due to the possibility of bringing the circular central part towards the top of the head by means of a translational movement, the nozzle placed on the central part can be raised and can emerge from the top of the head. This will limit the accumulation of paint on the appliance during use and also limit the residual deposits of the fluid which are liable to cause smearing of the articles to be sprayed or to be covered.

Please replace the paragraph beginning at page 3, line 6, with the following rewritten paragraph:

According to a preferred embodiment, the central part of the rotary element has at least one lateral shoulder ~~taking~~ which takes the form of a spindle ~~which~~ and cooperate with a groove-shaped prolongation of the lateral aperture of the central body[[, the]]. The central body has at least one inner abutment located in the lateral aperture. The groove of the central body ~~making~~ makes it possible, after the rotary element is introduced into the central body, to displace the rotary element towards the top of the central body, until the shoulder comes to bear against the inner abutment of the top of the central body.

Please replace the paragraph beginning at page 3, line 17, with the following rewritten paragraph:

According to this same embodiment, the central part of the rotary element has a second shoulder of the central part, ~~said~~ and the second shoulder ~~being~~ is opposite the first and likewise ~~taking~~ takes the form of a spindle[[, the]]. The second shoulder ~~cooperating~~ cooperates with a groove made on the other side of the central body. The seal ~~ensuring~~ ensures leak-tightness between the central body and the gun slides in a bore made in the spindle and at the base of the central body, so as to come to bear against the circular central part of the rotary element.

Please replace the paragraph beginning at page 4, line 5, with the following rewritten paragraph:

The central body advantageously has passing through it a series of ducts allowing a low-pressure air stream for setting the opening angle of the fluid taper emerging through the nozzle[[, the]]. The ducts ~~being~~ are located on one said of the nozzle and on the other and forming at their outlet an acute angle to the central conduit of the nozzle.

Please replace the paragraph beginning at page 4, line 13, with the following rewritten paragraph:

The central body has two diametrically opposed stubs in its upper part[[, the]]. The central body ~~having~~ has two complementary ducts passing through it ~~two complementary ducts~~ which are prolonged within said stubs[[, with]]. The ducts have outlet orifices for directing a low-pressure air stream substantially perpendicularly to the slit of the nozzle, against the pressurized fluid taper emerging from the nozzle, thus causing the atomization of ~~said~~ the fluid taper.

Please replace the paragraph beginning at page 4, line 22, with the following rewritten paragraph:

The rotary element has a pin which butts against two rims in the central body so as to be positioned in two ways which correspond to the working configuration and the cleaning configuration of the nozzle. The rotary element is connected to a handle which makes it possible to rotate through 180° between the two respective working and cleaning positions. According to the preferred embodiment, the rotary element is made from steel, stainless steel or chrome steel which in all cases has undergone thermal treatment for hardening its surface[[, the]]. The nozzle is manufactured from hard metal, for example from tungsten carbide[[, the]]. The central body is made from anodized aluminum, from steel or from a synthetic material reinforced with carbon ~~fibre~~ fiber, and the cylindrical seal is made from ferrous or non-ferrous metal or from reinforced composite material.

Please insert the following section heading at page 5, line 1:

BRIEF DESCRIPTION OF THE DRAWINGS

Please replace the paragraph beginning at page 5, line 4, with the following rewritten paragraph:

~~In the drawing,~~ Figure 1 shows a view of a spray head of one embodiment of the head, partially in section, together with all its component elements,

Please insert the following section heading at page 5, line 37:

DESCRIPTION OF A PREFERRED EMBODIMENT

Please replace the paragraph beginning at page 6, line 14, with the following rewritten paragraph:

The rotary element 3 comprises a central part 31 taking the form of a ball and two shoulders 32, 32a, taking the form of a spindle (see also Figure 3). The shoulders 32 and 32a have at their free end a truncated disc 33 and a disc 35 respectively. The truncated disc 33 comprises a pin 34, cooperating with a recess 34a made in the central body 2 and ~~serving~~ the bottom of the recess serves as an abutment. A rod 36 extends outwards from the disc 33, prolongs the shoulder 32 along the same axis and receives at its free end a handle 36a fastened by means of a pin 36b. Alternatively, the handle 36a may be integrally ~~moulded~~ molded from reinforced synthetic material.

Please replace the paragraph beginning at page 6, line 27, with the following rewritten paragraph:

The cylindrical seal 4 has on its inner surface a V-shaped indentation 41 in contact with the rotary element 3 which rests on the two edges of the indentation 41. This indentation may take the form~~, in section,~~ of a V or of a U. Alternatively, it may be replaced by a circular seal 41a which [[will]] is preferably [[be]] made from metal or from a composite material.

Please replace the paragraph beginning at page 6, line 35, with the following rewritten paragraph:

Within the central part 31 (Figure 3) of the rotary element 3 is located a tungsten carbide spray insert of nozzle 37 and a hollow screw 39 which grips the insert 37 by means of an O-ring seal 38 which is placed between the nozzle and the screw. The screw ~~which~~ has a central bore, not shown, and is tightened with the aid of a hexagon-head spanner. The slit of the insert 37 is placed in the direction of the axis of the rotary element 3 (Figure 2).

Please replace the paragraph beginning at page 7, line 6, with the following rewritten paragraph:

The central body 2 (Figure 4 and 5) has a first lateral aperture 21 which is prolonged upwards by a groove 22[[, a]]. A second lateral aperture 21a of smaller dimension ~~being~~ is located on the opposite side to the first aperture and is likewise ~~being~~ prolonged by a groove, like ~~as in the case of~~ the lateral aperture 21. Two stubs 23 are placed at the top of the central body[[,]] ~~each having~~ . Each has an outlet orifice 25 in the direction of the axis of the central body and substantially perpendicular to the latter. These orifices 25 are in communication with two ducts 24 which pass through the wall of the central body in the direction of its axis and which are substantially perpendicular to the outlet orifices 25. These ducts 24 are intended for delivering an air stream towards the top of the spray insert 37 which is at the base of the jet. Their outlet orifices 25 may be replaced by slits. Further ducts 28 pass through the walls of the central body 2 in the direction of its axis so as to have access to the respective outlet orifices 29 (Figures 6 and 7) which are placed at the top of the central body and form an acute angle to the taper shape of the spray which emerges through the slit of the nozzle. These four orifices 29 are intended for delivering an air stream which makes it possible to change the spray angle. Within each of these ducts 28, and at ~~their~~ its base, is provided a thread 28a which makes it possible to introduce, by means of a hexagon-head spanner, screws 28b which are used as air throttles. They take the form of hollow screws with different bore diameters for the purpose of varying the air flow. All the screws 28b of the same set have the same bore diameter. It is clear that the ducts 24 may likewise be provided with the hollow screws 28b serving for setting the air flow.

Please replace the paragraph beginning at page 8, line 16, with the following rewritten paragraph:

During operation, the rotary element 3 is introduced into the central body 2 through the aperture 21, and the truncated disc 33 having a diameter greater than the aperture 21 fixes the position up to which the rotary element 3 can be introduced. The disc 35 will emerge on the other side of the central body 2 through the aperture 21a. At this moment, the shoulders 32, 32a can slide over the entire ~~length~~ height of the grooves 22 towards the top of the central body 2, until ~~said~~ the shoulders 32 strike the upper part of the ~~notches~~ grooves 22. The rotary element 3 is then located at the top of the central body 2 and the spray nozzle 37 is above ~~said~~ the top. The seal 4 slides within the bore 30 of the central body 2 so as to ensure leak-tightness between the latter and the gun which is not illustrated in the drawing. The indentation 41 of the cylindrical seal 4 ensures greater leak-tightness, since the central part 31 of the rotary element 3, ~~said central part being~~ which is ball-shaped in the drawing, rests on the two edges of the indentation 41. In order to ensure this leak-tightness more effectively, the cylindrical seal 4 has at its base the end seal 5 made from polyamide plastic (nylon), which connects the head 1 to the gun, and the O-ring seal 6 made from a material with the trademark Viton, which cooperates with the central body 2 within its bore 30.

Please replace the paragraph beginning at page 9, line 4, with the following rewritten paragraph:

When the spray head 1 is in its working position, as shown in Figure 1, the high-pressure fluid arrives by way of the bores 7a, 7 and continues its path through the screw 39 and the nozzle 37 which are connected by means of the O-ring seal 38 made of Teflon. The fluid, which will emerge in the form of a taper shape of the spray through the spray nozzle 37, can be set by the addition of ~~the~~ low-pressure air supplied by ~~means of~~ the two series of ducts (24, 28) which extend in the direction of the axis of the central body and within its walls. The pressurized air passes through the two ducts 24, coming from the groove 27 at the base of the central body 2, and arrives at the outlet orifices 25 which form a substantially right angle to the ducts[[, the]] . The low-pressure air ~~being~~ is thrown substantially perpendicularly against the high-pressure fluid

taper spray which emerges through the slit of the nozzle 37[[,]] ~~thus reinforcing.~~ This reinforces the atomization of ~~said~~ the fluid taper spray by this supply of air. ~~The low~~ Low-pressure air likewise arrives at the ducts 28 which also extend from the base of the central body 2 and travels within the walls of ~~said~~ the central body 2 in order to arrive at the orifices 29 which ~~have an inclination~~ are inclined in relation to the ducts 28. The low-pressure air passes through the ducts 28 and emerges on one side of the nozzle 37 and on the other side, at the same time forming an acute angle to the central conduit of the nozzle 37[[,]]. This makes ~~so as to make~~ it possible to set the opening angle of the fluid taper spray which emerges through the nozzle 37.

Please replace the paragraph beginning at page 10, line 1, with the following rewritten paragraph:

The variant of the head illustrated in Figures 8 to 11 comprises a central body 2, through which ~~passes~~ a rotary element or key, not illustrated, ~~which is~~ passes. The rotary element is identical to the element 3 of the embodiment of Figures 1 to 7 and is provided with a seal, likewise not illustrated, which is identical to the seal 4 of Figures 1 to 7. In Figures 8 to 11, only the central body [[2]] has been illustrated ~~on the understanding that all the~~. The elements forming the central body and [[all]] the elements forming the head 2 and participating in the operation of the latter are the same as those in the embodiment in Figures 1 to 7.

Please replace the paragraph beginning at page 10, line 15, with the following rewritten paragraph:

The head 2 of Figures 8 to 11 ~~therefore again~~ also has the lateral aperture 21 which is prolonged upwards by a groove 22 ~~allowing~~ that allows the rotary element or key 3 to be introduced into the head 2 and brought into the working position by ~~means of~~ an upward translational movement in the groove 22, as illustrated in Figure 11. The two stubs 23 placed at the top of the head 2 likewise have the outlet orifice 50 which, in ~~the variant~~ this variation, ~~takes the form of~~ is formed as a slit ~~directing~~ to direct the additional atomizing air at an angle of approximately 12° in relation to the axis of the head. This angle of 12° may, of course, vary within a range from 0 to 20°, if action is to be taken on the jet at the outlet of the nozzle or a little higher. This angle

[[will]] also ~~depend~~ depends on the height between the top of the nozzle and the top of the head, said height being in the range of 1 to 5 mm.

Please replace the paragraph beginning at page 10, line 32, with the following rewritten paragraph:

As shown in the embodiment of Figures 1 to 7, the atomizing orifices 50 are fed by the ducts 24 identical to those of the embodiment of Figures 1 to 7.

Please replace the paragraph beginning at page 10, line 36, with the following rewritten paragraph:

~~Still as~~ As shown in the embodiment of Figures 1 to 7, the ducts 28 (Figures 8 and 11) are connected to the outlet orifices 29 issuing at the top of the head 2. ~~In the variant illustrated, there~~ There are two outlet orifices ~~29; they~~, although there may~~, however,~~ be more ~~numerous~~, for example 4 or 6. As shown in the embodiment of Figures 1 to 7, these outlet orifices 29 are intended for the additional air opening of the sheaf of the main jet, to a greater or lesser ~~extent~~ degree. If there are 4 ~~of them~~ ducts, they will issue on either side of the axis XI-XI of the section of Figure 11. If there are 6 ducts, they will be placed on either side of the ducts 28 of Figure 8. As illustrated in Figure 11, the outlet orifices 29 form an angle to the vertical axis of the head which varies within a range of 45 to 60°. In the variant of Figure 11, the angle is 50°.

Please replace the paragraph beginning at page 11, line 14, with the following rewritten paragraph:

Finally, in the ~~variant of~~ variation shown in Figures 8 to 11, the rotary element or key 3 is introduced into lateral apertures 21 of the head 2 which form an axis of 45° (axis IX-IX) of the section of Figure 9) in relation to the two stubs 23 (line X-X of Figure 8). Thus, the nozzle 51 (Figure 8) ~~will be~~ is placed at 45° in relation to the axis of the rotary element or key 3. This arrangement is advantageous because it allows an ~~easier~~ improved distribution of the additional air ducts and consequently a simpler manufacture of the head.

Please replace the paragraph beginning at page 11, line 25, with the following rewritten paragraph:

The embodiment of Figures 1 to 7, and also the variant of Figures 8 to 11, comprises a rotary element ~~taking the form of~~ formed as a ball and partially introduced into a funnel-shaped part located within the seal 4. As mentioned above, an indentation 41 is placed on the periphery of the funnel at the location where the spherical surface of the ball 31 is in contact with the interior of the seal. This indentation 41 may be produced by machining or moulding or by chasing the material of said seal. Alternatively, the indentation 41 may be replaced by a covering taking the form of a circular zone 41a inlaid within the cone, the zone 41a being in contact with the ball of the rotary element.

Please replace the paragraph beginning at page 12, line 10, with the following rewritten paragraph:

A central body 2 is produced from anodized aluminum; it may, however, ~~by~~ be manufactured from stainless steel, from chrome steel or from plastic reinforced, for example, with carbon ~~fibres~~ fibers.